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ABSTRACT

In 1980, the Colorado State Legislature passed legislation which enabled 12 southeastern Colorado school districts with enrollments from 30 to 330 to experiment with a 4-day school week as an alternative to reducing programs. Each district was allowed to determine which weekday its schools would not be in session, length of the school day, and actual number of days in the school year. To evaluate the program questionnaires were sent to students in grades 4-8 and grades 9-12, to all parents of school-age children, and to all certified and non-certified staff. Findings indicated that, although the districts implemented the 4-day schedule with many variations and different objectives, all districts demonstrated the potential of the schedule to save energy and transportation costs and to reduce student and teacher absenteeism. Achievement levels for students were comparable to their performance before going to the innovative schedule. Parents, teachers, and students all favored the 4-day week over the 5-day week by a wide margin. Strategic considerations (increased energy saving versus convenient extracurricular activity scheduling) surrounded the decision to take Monday or Friday off. The districts achieved notable cost savings in gasoline consumption and maintenance costs for buses, electrical consumption, and substitute teacher costs. (Author/CM)

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An Evaluation of the Four-Day School Week in Colorado

The Final Report

by

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An Evaluation of the Four-Day School Week in Colorado

The Final Report

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Robert W. Edelen, Project Assistant

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Robert Williams Richburg

Robert Wilson Edelen

June 30, 1981

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SUMMARY OF MAJOR FINDINGS

The major findings of this research are summarized below for the convenience of the reader. Background to the research, procedures, and elaboration of these findings follow in greater detail.

1. The concept of extending the school day for four days in lieu of holding classes a fifth day is an innovative alternative to the conventional five-day school week. Though the twelve districts involved in this study implemented the four-day schedule with many variations and with differing objectives, all districts demonstrated the potential of the schedule to save energy and transportation costs, and to reduce student and teacher absenteeism.

2. Achievement levels for students on the four-day week are very comparable to their performance before going to the innovative schedule.

3. Parents, teachers, and students all favor the four-day week concept over the five-day week by a wide margin. Ninety-one percent of the 767 parents surveyed supported the four-day week. Likewise, 94.7% of the 205 teachers and 93.2% of the 1,474 students surveyed indicated a preference for the alternative schedule. This broad support suggests that the four-day schedule offers more than an opportunity to cut budget costs. Many of

those surveyed prefer the alternative schedule because of the personal and professional opportunities presented by the three-day weekend, and also because of its instructional advantages. Secondary teachers believe that longer class periods provide greater instructional efficiency. Elementary teachers also favor the four-day schedule. They often comment that the days are long for young children, but also cite many instructional advantages which can be achieved with careful and creative planning.

4. There are important strategic considerations surrounding the decision to take Monday or Friday off on the four-day schedule. Taking Monday off will improve energy savings. Taking Friday off reduces energy savings, but enables a district to schedule extracurricular activities so they do not interfere with academic time. By using Fridays for sporting events and other extra-curricular activities, one district calculated savings in academic time which approached one week per student in its high school.

5. The school districts in this study achieved notable cost savings in many areas. Gasoline consumption for buses and other school vehicles was reduced by 22.5%. Bus maintenance costs were reduced by 18%. Electrical consumption was reduced by 23%. After adjustments were made for the fact that the 1980-81 school year in Colorado was one of the warmest on record, these districts showed savings in heating fuel consumption ranging from 7% to 25%. Savings were also realized in substitute teachers' costs, as these

districts utilized an average of 24.5 fewer substitutes under the four-day schedule.

CHAPTER 1

INTRODUCTION

School districts in smaller communities and rural areas throughout the United States are facing increasingly difficult issues. Declining enrollments, based upon rural to urban migration patterns and lower birth rates, have decreased school revenues at a time when inflation is making the costs of instructional programs dramatically higher. Dropping extracurricular activities and reducing elective academic offerings have typically been seen as primary solutions to these budgetary problems.

Spurred by the examples of school districts in Maine and New Mexico, the Colorado State Legislature passed legislation in April, 1980, which enabled school districts in Colorado to experiment with a four-day school week as an alternative to reducing programs. By lengthening four school days, the same instructional time can be achieved as with the conventional five day calendar, presumably with considerable savings in energy and transportation costs.

This report summarizes the comprehensive evaluation of twelve school districts in the state of Colorado, which applied to the Colorado State Board of Education in the spring of 1980 for permission to experiment with the four-day school week concept.[1]

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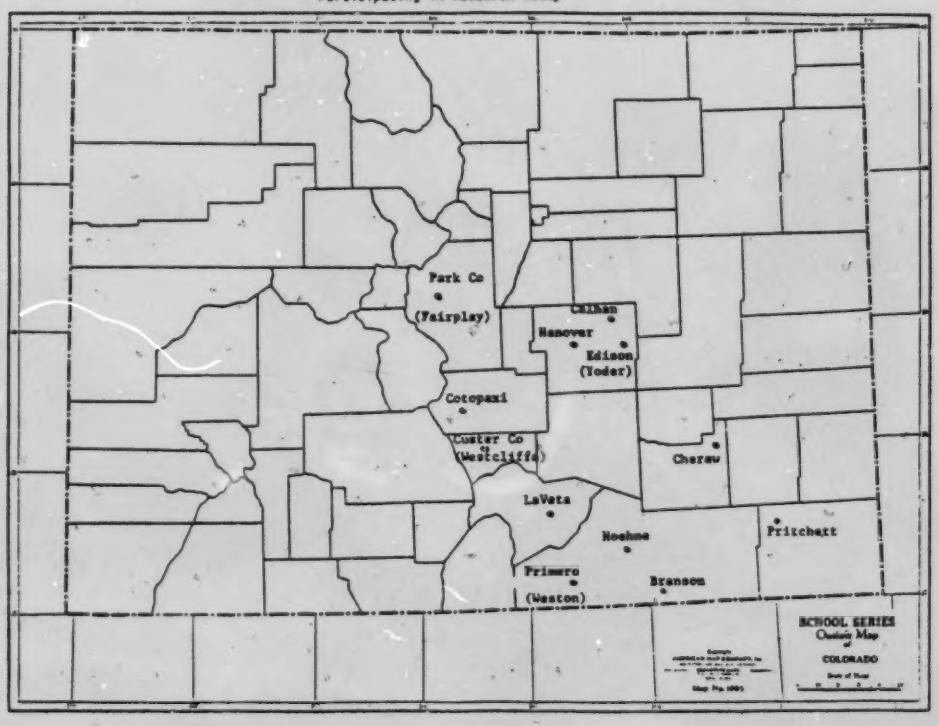
1 The names and addresses of the participating districts are included in the acknowledgements.

As shown on the map below, the districts are located in the southeastern quadrant of the state. All the districts, while serving large geographic areas have small enrollments. They range in area from Cheraw with a district of 130 square miles to Park County with 1,997 square miles. The districts range in size from Edison District #54 with a K-12 enrollment of 30, to Hoehne School District #3 with an enrollment of 330.

Location of School Districts in Colorado
Participating in Research Study



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Patterns of Implementation of the Four-Day Schedule

Each district was allowed to determine which weekday its schools would not be in session. Four of the districts, (Cotopaxi, Custer County, Park County, and Primero) chose to take Friday off. Branson, Calhan, Cheraw, Hanover, Hoehne, and Pritchett chose Monday. The decisions to take Fridays off centered on the expectation that extracurricular activities could be scheduled entirely for Friday, so that students would not lose academic time to these activities. Those deciding to take Monday off reasoned that most national holidays are celebrated on Monday, and considerable academic time would be lost if classes were scheduled for Monday. Also, they expected to achieve greater energy savings by taking Monday off because their buildings are frequently heated on Friday evenings for sporting events. If Monday is the off day, the building thermostats can be turned down for a full three days (Saturday, Sunday, and Monday).

LaVeta and Edison alternated their school week calendar according to the season of the year. LaVeta did not schedule classes on Friday from the beginning of the school year until the end of March, then changed to a Monday off schedule for April and May. Edison scheduled classes five days a week during September, October, April, and May, then kept a Tuesday through Friday schedule from November through March.

The length of the school day and the actual number of days

in the school year was another decision left to the participating districts. For elementary children, the formula for determining the minimum number of hours of instruction to meet accreditation standards specifies five and one-half hours a day (exclusive of lunch) for 180 days. For secondary students, six hours a day (exclusive of lunch) for 180 days is the minimum requirement. The secondary formula is crucial, because all but one of the districts participating in the experimental four-day week used the longer secondary requirements to determine their elementary schedules. Financial limitations in rural school districts require that elementary and secondary students ride the same buses. Therefore, the length of the school day is the same for both elementary and secondary students.

In order to achieve the "comparability of educational opportunity and services" specified by the enabling legislation, participating school districts calculated the minimum instructional time required for the new schedule by multiplying the minimum daily instructional time for secondary students (six hours) times the minimum number of days allowed by state law (180). This equaled 1,080 instructional hours. While there is some variability between the districts, most achieved this 1,080 hour figure by changing to a seven and one-half hour instructional day for 144 days. This produced the same thirty-six week school year as in a conventional calendar, but with only four days each

week.

The school day typically begins at 8:00 A.M. for the districts on the four-day week, and ends a few minutes after 4:00 P.M. There are a few exceptions to this pattern that are worth noting. Cheraw began the 1980-81 school year with a schedule that ran from 7:50 to 4:30, but found that to be excessively long. It therefore changed to a 7:50 to 4:00 P.M. day in February. Another school experimented with an 8:20 to 4:22 day for the first few months of the year. However, with the end of daylight savings time, the district found that students were arriving home long after dark, and revised their schedule to an 8:00 to 4:05 day. The Edison School District developed its schedule so as to have a shorter day, 8:30 to 3:30 and a longer school year, 155 days.

Many of these districts attempted to improve student concentration through this lengthened day by providing an extra meal or snack break. The Cotopaxi school, for example, began the school year offering a mid-afternoon snack break for its elementary students. The break seemed to help student attentiveness, but was costly. Cotopaxi also implemented a breakfast break at 9:15, and delayed the lunch break. This gave students a break from their studies, and reduced expenses because the state reimbursed them for serving breakfast. Custer County found that offering an optional breakfast to all students as

soon as the buses arrived at school was a good idea, nutritionally and educationally. Other schools such as LaVeta provided an early lunch program and then a snack break in the middle of the afternoon.

Methods and Procedures of the Study

The Colorado State Board of Education's administrative guidelines specify a minimum evaluation plan to assess the alternative school calendar's effectiveness. Each school is required to "provide evidence to support the expectation that pupils will receive educational opportunity and services under the pilot program which are comparable to those offered under the traditional 180 day calendar." Specifically, an evaluation study is required of each district which will provide data on "the impact on student achievement, transportation and facility utilization changes, cost comparisons, staff adjustments and reactions, parent/home adjustments and reactions, and student reactions." (1)

The Office for Rural Education (ORE) at Colorado State University was contracted in December of 1980 to conduct the evaluation study. The ORE staff drafted evaluation instruments and study guidelines which would enable the collection of the state mandated data, as well as range of other information about the instructional aspects of the alternative calendar.

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(1) Proposed Amendments to Administration of the Pilot Programs concerned with an alternative school year 1 CCR 301-13, June 18, 1980.

Specific and separate questionnaires were designed for students in grades 4-8 and for those in grades 9-12. Questionnaires were also sent to parents of all school-age children in each district, and to all certified and non-certified staff in each school. (1)

The parent questionnaire sought to assess the affects of the alternative calendar on family time together, children's attitudes toward school, and changes in parent-school relations. Parents were also asked to indicate what their children did during the extra day away from school, and to make judgments about the worth of what their children did with their time.

The questionnaire to the certified staff sought to discover whether teachers change their teaching styles because of the lengthened day and shortened week. Did they assign more or less homework? Are textbooks organized to facilitate instruction with this kind of schedule? Did they feel they accomplished as much under the four-day schedule as they did with the traditional five day week?

Non-certified staff (i.e. cooks, bus drivers, and secretaries) were asked how the new schedule affected their ability to perform their jobs, and how they felt it was affecting student attitudes toward school.

The students in grades 4-12 filled out questionnaires, indicating how much they liked the new schedule and how much

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(1) The questionnaires utilized in the study are included in Appendix A.

they felt they were learning this year compared to last year. They were also asked what they did with their extra free day, and to compare their school attendance this year with last.

The superintendents of the districts piloting the alternative calendar were brought together in January to review and critique the evaluation guidelines and instruments. Final drafts were then completed and mailed to the superintendents, who were responsible for administering the questionnaires, summarizing student achievement, and facility utilization and cost information.

Staff members from the Office for Rural Education visited each school and community involved in the study. Accompanied by the Area Coordinators from the Colorado State Department of Education, they talked to administrators, teachers, parents, and students to gain insights which might not be gained from the questionnaires described above. Law enforcement officials, business owners and citizens were asked for their views of the new schedule.

Special attention was paid to the primary grades (K-3) on these site visits, because students at this level were not able to fill out questionnaires successfully. These younger students were interviewed in small groups, and observed for signs of fatigue. These students and their teachers were questioned about their attitudes regarding school and the new calendar. Efforts

were made to determine what adaptations the teachers of the younger children made to maintain attention spans and encourage learning.

Superintendents were asked to summarize a variety of information about the operation of their districts for the two years prior to going on the four-day schedule, as well as for the experimental year. Student achievement and attendance records were summarized for the three year period as well as cost data for a variety of categories ranging from heating and utilities to substitute teacher costs.

CHAPTER II

TEACHER REACTION TO THE FOUR-DAY SCHOOL WEEK

There is no question that the overwhelming majority of teachers in this study favored the four-day schedule over the conventional schedule. Ninety-four and seven-tenths percent of the 205 teachers surveyed indicated a preference for the alternative calendar, though roughly 20% proposed modifications of the four-day schedule as it was implemented in their district. The teachers also indicated that they were more effective as teachers under this schedule, that student attitudes toward school were more positive, and that student achievement had increased in comparison with previous years under traditional schedules. The minority of teachers who opposed the four-day schedule registered significant comments about its weaknesses.

This chapter will summarize the reasons the four-day week is widely favored by teachers and the suggestions that have been made to modify or improve it. It will also focus on the concerns registered by the small but vocal percentage of teachers who oppose the alternative schedule.

Virtually all teachers in the study could give personal reasons for favoring the four-day week. They enjoy the extra day away from school to spend time with their families, and to take care of shopping and personal business. Forty-nine percent said they used their extra day to relax. A small number indicated that

they held an extra job or worked on their own farm or ranch on their extra day off. Seventy-nine percent of those surveyed felt they most often used the extra day to take care of things which would otherwise require them to take a personal or professional day to do, such as doctor or dental appointments.

For many of the teachers, the extra day (though a day when classes were not held) was still a day spent on activities related to their responsibilities at school. Forty-six percent said they most often spent the day preparing instructional materials. An additional 36% said that they usually spent the day or part of the day in professional development or in-service activities. As one Custer County teacher indicated: "The four-day schedule gave me a day to attend two workshops this year plus two meetings in Denver that I otherwise would not have been able to attend." Apparently, the amount of in-service and staff development activity conducted on the fifth day varied widely between districts. Over half the teachers in Primero and Calhan indicated that this was an important use of their time on the fifth day, while there was virtually no indication of teacher involvement in these activities in Pritchett, Park County, Edison, or Hanover.

The teachers in the study suggested many instructional advantages to the four-day schedule. All districts except LaVeta lengthened class periods in their secondary level classes to between 60 and 70 minutes, and this seemed to produce significant

benefits. (1) As a Branson High School teacher put it: "The increased length of class increases the efficiency of the instructional process." Teachers of business, home economics, shop, drivers education, science, art, and physical education classes often commented about having more "time-on-task" with four longer periods than they had had with the same amount of actual time divided among five days. Project centered or activity classes, labs and field experiences clearly work better in this schedule according to the teachers surveyed. The physical education teacher in Park County reflected the views of several others in this regard when he commented that his students had improved 25% more this year in the President's physical fitness program than they did last year.

On the other hand, secondary teachers who work with low achieving students were less positive about the four-day schedule. Of the six secondary teachers who indicated they would wish to return to the five-day calendar, most were involved with children they described as "low achievers." One teacher in Park County commented: "My special education students lost ground this year. They need repetition and cannot take the longer day. The four-day week definitely hurt them academically." A Calhan High School teacher confirmed this view when he indicated that student achievement had increased for his high achieving students and decreased for his low achieving students. He explained this by

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(1) LaVeta added an extra period to its school day and kept the junior high and high school periods at 49 minutes in length.

saying: "The students who are motivated can learn more in this system. They have more time to ask questions and get help. The slower students need to have the time, but not in as large a time block. They seem to need that extra day of repeating." While this concern for low achievers seems to be an important one, it must be balanced with the fact that there were five special education teachers in the study who indicated a preference for the four-day schedule.

Homework is an important issue with secondary teachers on the four-day week schedule. When teachers were asked how they had modified their teaching methods, 50% said they were giving more time in class for study time, and were assigning less work to be done at home. They felt that this was a necessary adjustment because of the lengthened school day and the long bus ride home that many students faced. The issue that some teachers raise, however, is whether the time added to each of the four days is really instructional time. One Park County parent commented on this concern: "I have a 14 year old in school here. They are using the extra time in each of her classes to do homework. If that is true, what happened to the class time from the fifth day? If anything they should be getting more after school homework, not less!"

Other teachers defend this practice by saying that using class time for what would be homework in a five-day schedule has

real instructional benefits. By assigning work to be done in class while the teacher is present to assist and answer questions, much more can be accomplished than if that same work were assigned to be done at home by the student, without any recourse to assistance.

Still other teachers defended their homework philosophy by saying that while less was assigned during the four-day week, more was expected to be done over the three-day weekend. The long weekend actually favors major projects, research activities, and writing papers, because of the concentrated time available during the extra day.

Another important instructional advantage of the four-day week identified by secondary teachers was the savings in academic time which would normally be lost to extracurricular activities. As one Park County secondary teacher commented: "For the first time in my 13 years of teaching, all of my students are in class all of the time. This is because extra events are programmed over the three-day weekend." Another Park County teacher was equally enthusiastic when she said of the four-day week: "It's the greatest thing that ever happened to this school. It gives our students four days of uninterrupted classroom instruction. There are no extracurricular activities during the school week."

The Custer County administration calculated the number of instructional hours lost per student, when extracurricular events

were scheduled during school hours in a conventional schedule. From the beginning of the school year to February 1, this amount totaled 2,965 student-hours of academic time. This translates to 4.1 school days for every student in the high school. This academic time is not lost during the four-day schedule, when activities are scheduled for the day off.

The school districts utilizing the Monday through Thursday instructional week were much more likely to prevent sports and other extracurricular activities from cutting into academic time, because most of these events are routinely scheduled for Friday. One teacher from Branson, a district on a Tuesday through Friday week, commented: "The biggest problem is still the interruption or cancellation of classes for extracurricular activities." Clearly a day lost for any reason under the four-day schedule has greater consequences than a day lost under the five-day schedule." Teacher comments indicated that the scheduling of extracurricular activities to prevent the loss of academic time is one of the keys to making the four-day schedule successful. In this regard, having all schools of an interscholastic conference operate on the same four-day schedule is highly desirable.

Athletic coaches are another group of secondary faculty with special concerns regarding the alternative calendar. With the lengthened day, practices necessarily start later. In basketball or volleyball, where several teams and practices must be

staggered, many athletes and coaches do not arrive home until 8:00 or 9:00 p.m. This disrupts family routines, leads to exaggerated fatigue, and eliminates evening homework.

Another concern of coaches is the issue of holding practice on the fifth day. If practice is held in the winter, either a cold gymnasium must be used, or the energy conservation goal of the alternative schedule must be compromised. Coaches and players face a demanding week characterized by four extra-long days of classes and practice, a fifth day of some practice, and frequently a Saturday game.

If the school chooses not to hold athletic practices on the day when classes are not regularly scheduled, the players may lose skills and conditioning. As the Calhan basketball coach noted, athletic teams in schools with Tuesday - Friday schedules really receive only two days of hard practice per week. Thursday is a day to taper off so the players will be fresh for the Friday game. If there is no game on Saturday, the team does not meet for practice again until Tuesday afternoon, a lapse of four days. This coach indicated that while some more mature players will stay in good condition on their own, he can see a loss of conditioning in the younger players over the long weekend.

Other coaches, particularly those with Friday off, praise the four-day schedule where games are typically scheduled for Friday afternoon or evening. They report that not having classes

on the day of the game leaves players more rested and mentally alert for the competition.

The views of the elementary teachers in the study may be of particular importance in assessing the workability of the four-day schedule. It could be anticipated that the lengthened day would be more likely to affect the younger students adversely, because of their limited attention span. Some teachers in the study indicated that this was the case. A fourth and fifth grade teacher in Cheraw commented: "The length of the day is still somewhat stressful for elementary. I would like to see a shorter day and add an extra week to the school year." A third grade teacher held a similar view: "By the end of the day the kids are on each others nerves. It is a constant struggle to help them stay in control." A Park County first grade teacher added: "I can only accomplish so much in one day. It doesn't matter how many hours long the day is. I can accomplish about the same thing in 4, 6, or 8 hours. There are only so many productive minutes for first graders during the day...the extra one and a half hours are spent in longer recess periods, an added snack time, and rest time--none of which are 'learning times'."

These same teachers comment that they are not as energetic themselves because of the length of each day, that their children's retention over the long weekend is not as good, and that young children really need the repetition that occurs in the five-day

week. An interesting result of this survey, is not that some teachers made comments such as these, but rather how few expressed these concerns. Only five elementary teachers out of 84 (6%) in the study favored returning to a five-day schedule after having tried the four-day schedule. This is not to say that the concerns and perceptions of those who oppose the new schedule are not valid, but rather that a large number of other teachers found ways to cope with them. One Park County elementary teacher commented that: "Student achievement has improved except for handwriting." A third grade teacher in the same school said: "My students are happier with this schedule, therefore I accomplish more academically." A sixth grade teacher from Hoehne said: "The longer weekend gives students one more day to rest. They are ready for school when the week starts on Tuesday. Fewer students are absent during the week, and I am better organized because of the extra weekend day. The combination makes for a very productive week."

The elementary teachers who were particularly satisfied with the four-day schedule, admitted making significant adjustments in both scheduling and teaching methods. The strategies of elementary teachers in Hanover would be typical: Each teacher works with one or two grade levels all morning and the more rigorous subjects are taught intensively. After lunch the students are rotated from teacher to teacher every half hour to forty-five

minutes, with one teacher taking art, another music, another creative thinking, and so on. The change of teachers and activities seems to maintain the children's interest and attention. This faculty claims to have noticed no more fatigue under the longer day than previously.

CHAPTER III

PARENT REACTION TO THE FOUR-DAY SCHOOL WEEK

Seven hundred and sixty-seven questionnaires were returned by parents from the twelve school districts participating in the study. This represents 61.6% of all homes in the participating districts. Like the teachers surveyed, parents were very supportive of the four-day school week. Ninety-one percent of all parents surveyed were in favor of continuing with the new schedule, though 17% would modify the schedule as it was implemented in their district in some way. Nine percent stated a preference for the traditional five-day schedule.

In every district, parents favored the alternative calendar, though the degree of support varied from district to district. As may be seen in Figure 1, the parents in Pritchett and Branson were unanimous in their approval of the schedule. In Calhan, where there is more resistance to the four-day week than elsewhere, four out of five households were in favor of continuing on the four-day schedule.

In the design of the study, it was anticipated that there would be a concern about how the four-day week would work in households with two working parents. Among the twelve school districts participating, only Cheraw had a substantial percentage of families of this description. The Cheraw questionnaires were

Figure 1

Percent of Parents in Favor of Continuing the Four-Day School Schedule as is or with modifications

School District	% in Favor	Number of Parents Responding
Pritchett	100	37
Branson	100	22
Cotopaxi	97	76
Primero	96	25
Cheraw	94	49
Hanover	93	16
LaVeta	92	79
Custer County	88	98
Park County	87	108
Edison	84	19
Hoehne	83	146
Calhan	79	92

sorted to identify households with two working parents. While the sample is small (30%), the results showed that all supported the continuance of the four-day week.

Parents like the new schedule for a variety of reasons. One of the most often mentioned is the way the schedule facilitates family activities which cannot be scheduled for weekends. Physicians, orthodontists, dentists, etc., usually maintain office hours only on weekdays, so regular visits require children to miss

school frequently. In many of these smaller, more isolated communities, this may mean the loss of a full day of school on a monthly or even weekly basis, because of the lengthy time required to travel to the nearest city where these services are available. Over one hundred parents made comments indicating the advantages of the four-day week in this regard. The remarks were much like the one from a parent of a twelfth grader in Cheraw. "One of the reasons I like the four-day schedule is if you have a doctor's or dentist's appointment, you don't have to take your child out of school. I'm sure we've saved a dozen or more days of school this year."

Many parents appreciated the extra day with their children because of what it enabled them to do together. The parent of a second grader in Park County put it this way: "We use the extra day for mini-vacations, exploring the area we live in, family projects--in general becoming a close knit family--which is what having a family is all about." Other parents indicated that having an extra day with their children had given them more occasion to teach family values. As a parent of Calhan seventh and tenth graders put it: "It means fewer days for our children to be influenced by school relationships and more opportunity for home influence." Commenting in a similar vein a mother in Cheraw said: "I've appreciated having more opportunities to help my girls learn such responsibilities as cleaning

house and cooking."

For farm and ranch families with older children, the extra day provided a needed source of labor. A Calhan parent commented: "We lose a little in what chores get done during the week because the kids get home so late, but we sure can use them on Monday. In our business we need them."

Parents had a good deal to say about the influence of the four-day week on their children's attitudes toward, and performance in, school. A typical comment was made by a Cheraw parent: "My kids seem happier. They're not as tired of school. They actually look forward to going to school on Tuesday." A Hoehne parent made a similar comment: "I don't hear my kids complaining about having to go to school. They seem to enjoy it more this year than in the past. They don't mind the longer days. They always have lots of energy at the end of the day." Even those parents whose children faced long bus rides found advantages in the four-day week. A Hoehne parent said: "Joshua has a 120 mile roundtrip--three hour bus ride each day, and I feel he would be too tired doing it each day for five days. His work would suffer. This represents one less day he must ride the bus."

Not all parents had positive things to say about the four-day week. Though only 9% of the parents in the study would choose not to continue on this schedule, many more found some aspects of it to be undesirable. The concern most often registered was that

the school day was too long. One parent from Hoehne expressed her reservations this way: "The only dislike we have is the terribly long day. This seems to be the weak link in a very positive program, and its importance could ruin the whole thing. It simply puts too much stress on small children.

Several parents noted that their children were either at school or riding the bus from ten to eleven hours a day. A Calhan parent described her children's schedule and its consequences in this way: "The four-day week means that my children board the bus at about 6:40 A.M. and return home about 5:10, later when they're involved in sports. This is usually followed by a couple hours of homework or more. If they have a school activity or church activity to attend, they may not get to bed until 12:00 or later. Then they have to get up at 5:30 to get ready for the next day. This is too hard physically on them and they cannot receive what they should academically under these circumstances."

Many parents commented that the long weekend on the four-day schedule enabled their children to be more rested for school, and reduced their illnesses and absences. Some parents, especially those of elementary children, noted the opposite. A parent from Hanover commented: "The bus kids are just worn out, the grade school especially. It's just too long a day, and my child has been sick more because he is so worn out."

While many parents noted that the extra free day on the four-day schedule gave them opportunities to do special things together as a family, some parents noted that the longer school days cut into family time during the week. Several parents mentioned that they felt they lost touch with their children during the school week. One LaVeta parent, though in favor of continuing the alternative schedule, remarked: "The new calendar day is too long for elementary students. Their day starts at 6:00 A.M. and often doesn't end until 8:00. Almost all that time is structured with the bus ride, school, and homework. There's little time for fun or play. My kids are tired and cranky by the time they get home. We are both working parents but we find we are spending less quality time together as a family."

Families undoubtedly have to make adjustments during the school week because of the more concentrated schedule. Parents involved in farming or ranching noted that they often had to assume responsibility for their children's chores because of the length of the school day. A Cheraw parent also indicated that: "On school nights we cannot go anywhere because of early bed times."

The length of the school day was not the only reservation expressed by parents regarding the alternative schedule. Many questioned whether the adjustments that had been made in the school schedule in order to create the four-day week provided comparable education to the traditional five-day schedule. As one parent

from Park County remarked: "While the actual time at school may be the same, instructional time has been cut back. The school has said that the extra time given each class under the four-day schedule allows students to do homework in class, but what happened to the instruction that took place on the fifth day under the traditional calendar? Did teachers spend the whole class period on the fifth day letting their students do their homework? I doubt it!"

Parents in some school districts expressed concern that the hour and a half added to the length of the four days to compensate for the loss of the fifth day, was being used for activities which under the traditional calendar would have been scheduled after the school day. As a Cheraw parent commented: "Athletic practice used to be scheduled as an after school activity. Now it starts the last period of the day. This unquestionably reduces educational time."

Another dimension to scheduling extracurricular activities also distressed a number of parents in the study. While most districts were able to confine athletic and other activities to the week day when school was not in session, some were not. Some parents resented further intrusions of these activities into academic time. One Calhan parent, though in favor of the new schedule, remarked: "I feel that when you go to school only four days, to dismiss any part of that time for an athletic event is

inexcusable." In a similar vein, a parent from Hoehne said: "On a number of occasions the children missed one of their four days due to teacher's meetings and other events. If these events and meetings must be scheduled on a day other than Monday, then the kids should be in school that Monday to make up for it."

Another concern which some parents expressed about the new schedule was in regard to what kids did on their fifth day. A Cotopaxi parent noted that the fifth day was: "Just another day to goof around. There are no jobs here to keep idle hands and minds busy." A Calhan parent, though wanting to continue the new schedule, noted: "For families with two working parents, it leaves the children with no observation or constructive behavior." Another working parent agreed with this thinking by adding: "My children are bored. They are home alone on Monday, and in a small town there are no swimming pools, skating rinks, or arts and crafts programs to occupy them. School is the center of activity and learning, and one-fifth of that time is now lost."

A small number of parents felt that the fifth day, when children were not in school, was an inconvenience and an added expense. One parent was certain that the four-day schedule was costing their family more in terms of extra electricity used at home. Another parent noted that having a baby sitter the extra day was expensive, but she did point out that there were now four days when she was able to make it home before her children, who

under the traditional schedule were left unsupervised in the late afternoon. A Custer County parent said: "We live in the country and have to haul these kids back and forth for all these activities on Friday and it seems these activities are held nearly every Friday. That's a lot of traveling expense put on the parents."

CHAPTER IV

STUDENT REACTION TO THE FOUR-DAY SCHOOL WEEK

Eight hundred twelve students, grades four through eight, and 662 students, grades nine through twelve, filled out questionnaires which assessed their reaction to the four-day schedule. Students in the primary grades (K-3) were not able to complete questionnaires, so personal interviews were conducted with a sample during the site visits to determine their feelings about the new schedule. The 1,474 students who completed questionnaires represent over 85% of the students in the twelve districts represented in the study.

This chapter will summarize student reactions both by grade level and district. It will comment on how the schedule has changed student's lives at home and in school, reveal what they like and dislike about the alternative schedule, and discuss what they do with their extra day away from school.

Students are as enthusiastic about the four-day schedule as teachers and parents. Ninety-three and two-tenths percent of all the students who filled out questionnaires want their school district to continue on the four-day schedule. High school students are the most positive of all students. Ninety-six and two-tenths percent of students in grades nine through twelve favor the alternative schedule, though slightly over one-fourth of them would modify the schedule in some way.

As may be seen in Figures 2 and 3, student preference for the four-day schedule is high in every district in the study. All 54 students responding from Pritchett, representing grades 4 through 12, prefer this schedule to the conventional five-day schedule. Similarly, only two of 149 students who responded from Cotopaxi preferred the five-day schedule.

Figure 2

Percent of Students (Grades 4-8) in Favor of Continuing Four-Day Schedule as is or with Modifications

School District	% in Favor	Number of Students Responding
Pritchett	100	26
Cotopaxi	100	72
Custer County	98	98
Cheraw	96.8	61
Branson	96.1	26
Hanover	94.4	18
Park County	91.2	137
Primero	89	81
Calhan	85.2	108
Hoehne	84.5	110
LaVeta	83	53
Edison	77.8	9
	$\bar{X}$ = 91.8	N = 799

Figure 3

Percent of Students (Grades 9-12) in Favor of Continuing Four-Day Schedule as is or with Modifications

School District	% in Favor	Number of Students Responding
Branson	100	19
Cheraw	100	46
Edison	100	3
Pritchett	100	28
Custer Co.	98.7	77
Cotopaxi	97.4	77
Hoehne	97.1	105
Calhan	96.8	94
Park Co.	95.7	93
LaVeta	93.3	15
Primero	90.8	76
Hanover	81.8	22
	$\bar{X}$ = 96.2	N = 655

Students were asked several other questions in order to determine their evaluation of the new calendar. One question asked: "How well do you like school this year in comparison to last?" Despite the reality that many factors influence a student's attitude toward school, there is no reason to believe that any of these factors, except the change in calendar, would have a consistent effect across both district and grade level. As may be seen in Figure 4, 73% of the fourth through eighth graders

liked school either "much better" or "better" this year compared to the previous year.

Figure 4

Percent of Student Response by Grade Level to the Question: "Compared to Last Year, How Well Do You Like School?"

Grade Level (4-8)

Response	4	5	6	7	8	Totals for all five grade levels
Much better	56.4% N=96	48.9% N=93	49.1% N=82	50.7% N=69	41.2% N=61	48.6% N=401
Better	16.4% N=28	23.6% N=45	23.9% N=40	27.9% N=38	36.4% N=54	24.7% N=205
About the same	18.2% N=31	18.9% N=36	22.7% N=38	16.1% N=22	16.2% N=24	18.2% N=151
Worse	5.8% N=10	5.2% N=10	3.5% N=6	2.9% N=4	4.7% N=7	4.4% N=37
Much Worse	2.9% N=5	3.1% N=6	.5% N=1	2.2% N=3	1.3% N=2	2.4% N=17
	N=170	N=190	N=167	N=136	N=148	ΣN=811

Eighteen percent believe it was about the same, and less than seven percent believed that school was to any degree worse this year.

The same question was asked of the students in ninth through twelfth grades and the results were similar. As may be seen in

Figure 5, 77% of the high school students felt that school was in some measure better than last year. Fifteen and six-tenths percent felt it was about the same and about 7% felt that it was worse to some degree.

Some critics of the four-day schedule contend that it may be more suitable for older students than younger ones, because of the extended length of the school day. If students can judge correctly what is best for them, then these data do not support the critics' contentions. A higher percentage of fourth and fifth graders felt that this year on the four-day schedule was a better year than did the twelfth graders in the study.

Students were asked specifically about the length of the school day in another part of the questionnaire. They were given five response options to the question "How do you feel about the length of the school day?" They could respond that it was "much too long," "too long," "about the right length," "too short," or "much too short." A very small percentage of students (2.5%) felt the day was too short. A majority of the students were satisfied with the longer day. Sixty-five percent of the fourth through eighth grades and 71% of the high school students responded that the day was about the right length. About 22% of both groups felt the day was "too long" and 8% of the younger students and 4% of the high school students believed that the day was much too long.

Student responses indicated that they felt they were absent

from school less, and that they were learning more this year than in the previous school year. Fifty-nine percent of the high school students felt they had learned more this year with an additional 36% feeling they had learned about the same as last year. For the fourth through eighth graders 70% felt they had learned more this year than last.

Figure 5

Percent of Student Response by Grade Level to the Question: "Compared to Last Year, How Well Do You Like School?"

Response	Grade Level (9-12) 9	10	11	12	Total for all four grade levels
Much better	45.4% N=79	45.7% N=76	43.5% N=81	30.8% N=42	41.7% N=278
Better	32.7% N=57	35.5% N=59	35.4% N=66	38.2% N=52	35.3% N=234
About the same	14.9% N=26	13.2% N=22	13.9% N=26	22.0% N=30	15.6% N=104
Worse	5.1% N=9	3.6% N=6	4.8% N=9	5.1% N=7	4.7% N=31
Much Worse	1.7% N=3	1.8% N=3	2.1% N=4	3.6% N=5	2.3% N=15
	N=174	N=166	N=186	N=136	ΣN=662

Effects of Schedule on Non-School Activities

The study also sought to find out how students felt the four-day schedule had affected aspects of their non-school life. Questions to ascertain how the alternative schedule impacted family time, and what students did with their extra free day, were also asked. Younger students found that the new schedule gave them more time to be with their families. As may be seen in Figure 6, 28% of the fourth through eighth graders were spending much more time this year with their families than last, and an additional 20.8% said they were spending somewhat more time with their family.

Figure 6

Student Perceptions of Amount of Time Spent with their Family this Year Under the Four-Day School Week Compared to Last Year

Responses	4th through 8th grade response totals	9th through 12th grade response totals
Much more time with family	28.1% N=228	19.5% N=129
Somewhat more time with family	20.8% N=169	26.2% N=173
About the same amount of time as last year	26.8% N=218	36.1% N=238
Somewhat less time with family	14.8% N=120	11.4% N=75
Much less time with family	7.4% N=60	5.5% N=36
	ΣN=812	ΣN=660

Forty-six percent of high school students felt they had more time with their family under the new schedule. The four-day schedule clearly allows families to spend more time together than was previously possible.

In order to determine what students did with their extra weekday under the four-day schedule, the questionnaire asked students to select three activities from a list of ten that they were most likely to be involved in on the fifth day. As may be seen in Figure 7, nearly half of the fourth through eighth graders work, though not for pay, on that day. Other common activities were "goofing around," watching television, and participating in sports.

Figure 7

Most Common Fifth Day Activities
for Students in Grades 4 - 8

Activity	% Indicating this Activity as a Significant Use of Fifth Day	Number of Respondents
Work without pay	49.1	399
Goofing around	45.6	370
Watch T.V.	36.2	294
Games and sports	35.5	288
Listen to music	28.7	233
Hobbies	26.1	212
Read	23.4	190
Study (school work)	19.2	156
Work for pay	18.5	150
Drive around	0	

For the high school students, working without pay was also the most common activity. As may be seen in Figure 8, 57.7% of the ninth through twelfth graders were involved in work without pay. In contrast with the younger students, however, the second most common activity of this group was working for pay. Thirty-six and four-tenths percent of the high school students noted that this was a significant activity on the fifth day. Taken together, over 94% of the high school students are involved in work activities.

Figure 8

Most Common Fifth Day Activities
for Students Grades 9-12

Activity	% Indicating this Activity as a Significant Use of Fifth Day	Number of Respondents
Working without pay	57.7	381
Working for pay	36.4	240
Games and sports	30.8	204
Goofing around	30.7	203
Hobbies	29.4	194
Listen to music	25.3	167
Study	25.0	165
Watch T.V.	18.8	124
Read	14.7	97
Drive Around	13.0	86

CHAPTER V

STUDENT ACHIEVEMENT

Comparisons of student achievement under the five-day schedule with achievement under the four-day schedule are difficult to make. Although eight of the twelve school districts in the study provided some student achievement data for the past three years, a substantial amount was not appropriate to make these comparisons. Seven different achievement tests have been employed by these districts over that three year period, and because each of these tests is normed differently, comparisons between scores on different tests are not reliable. Only Cheraw, among all the districts, tested each grade each year. The most common pattern among the others was to test selected grades (the same ones) each year. Consequently, following the same group of students longitudinally was difficult in most cases.

The researchers looked for district data that would allow the achievement of the same group of students to be assessed over a three-year period with the same test. For example, they looked for situations where the achievement of first graders in 1978-79 could be compared against that of second graders in 1979-80 and third graders in 1980-81, on the presumption that these are same students over a three-year period. Figures 9 through 13 illustrate fifteen situations of this type. In two

cases composite scores were utilized and in the remainder subtest scores were used.

Figure 9 shows the comparison cited in the example above. The achievement of primary level students from Cheraw, Cotopaxi, and Hoehne is shown from 1978-1981. As first and second graders under the traditional five-day schedule, achievement scores declined in two out of three districts and rose slightly in the third. As third graders under the four-day schedule, achievement continued to decline for one district, but rose in the other two. The results seem to slightly favor the four-day schedule.

Figure 10 summarizes reading achievement scores for upper elementary students from Custer County, Hanover, and Hoehne. Between April of their third grade year and April of their fourth grade year under the five-day schedule, the students in these districts gained .8 of a grade level in reading achievement. In a corresponding period between April of their fourth grade year and April of their fifth grade year under the four-day schedule, they gained 1.4 grades.

Figure 11 summarizes math achievement for these same students. In this case, the average math gains from third to fourth grade (1.1 grades) surpassed the average gain from fourth to fifth grade (.7 of a grade). The results for these students are mixed. Reading gains were greater under the four-day schedule, but math achievement gains were smaller.

Figure 12 shows composite achievement scores for junior high students in four schools over the three year period from 1978-1981. Consistent patterns are not to be found. Gains made by students in Calhan under the four-day schedule are offset by losses seen in Cheraw. Students in Primero and Cotopaxi showed virtually the same level of achievement in the ninth grade under the four-day schedule as they did in the seventh grade under the traditional schedule. Both showed a slight decline in achievement in the eighth grade under a five-day schedule.

Figure 13 summarizes math achievement scores for the high school students in two districts, Cheraw and Hanover. Students seem to be accomplishing roughly the same amount regardless of whether they are on the five-day or four-day schedule.

Undoubtedly, more testing needs to be done before conclusive judgments are made concerning the impact of the four-day schedule on student achievement. In this preliminary assessment, however, achievement is at least comparable. There is no reason to suspect that going to school four longer days, instead of five of a traditional length, hinders student achievement.

Figure 9

Comparison of Composite Achievement Scores (ITBS)
for 1st Graders in 1978-79, with 2nd Graders in
1979-80, with 3rd Graders in 1980-81. (Three Districts)
(Tests administered in April of each year)

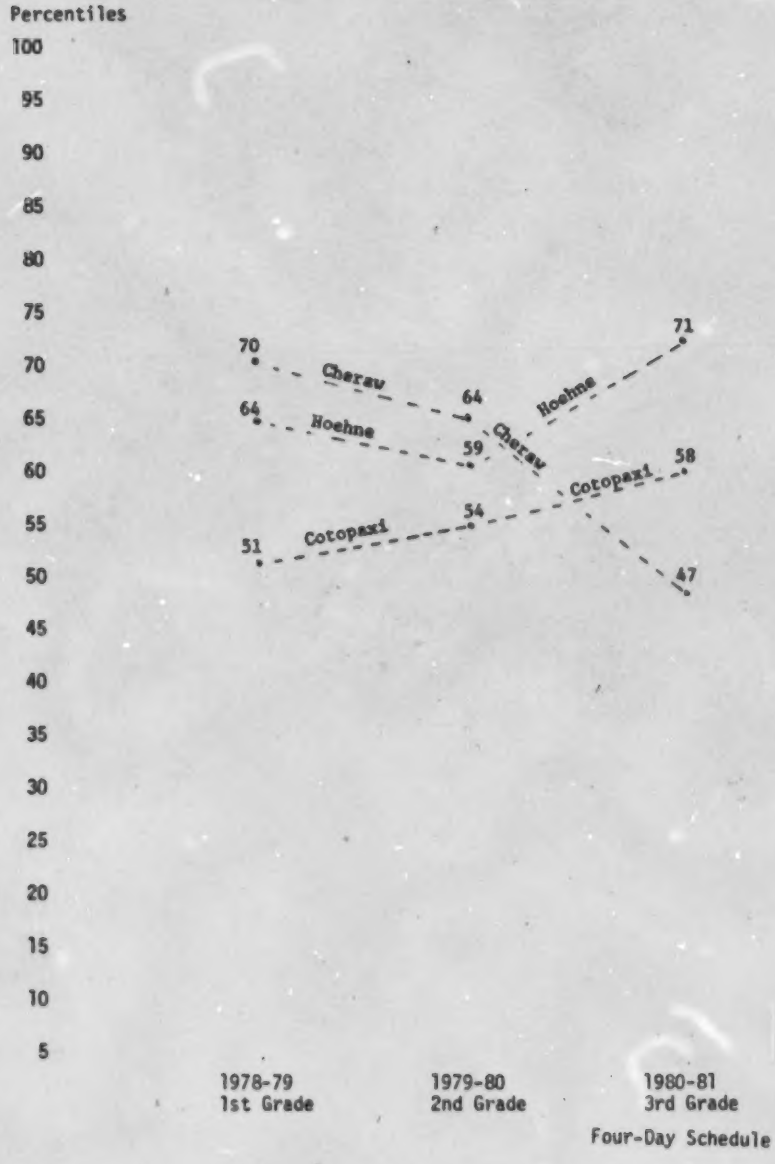

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Figure 10

Comparison of Reading Achievement Scores (ITBS)
for 3rd Graders in 1978-79, with 4th Graders in
1979-80, with 5th Graders in 1980-81. (Three Districts)
(Tests administered in April of each year)

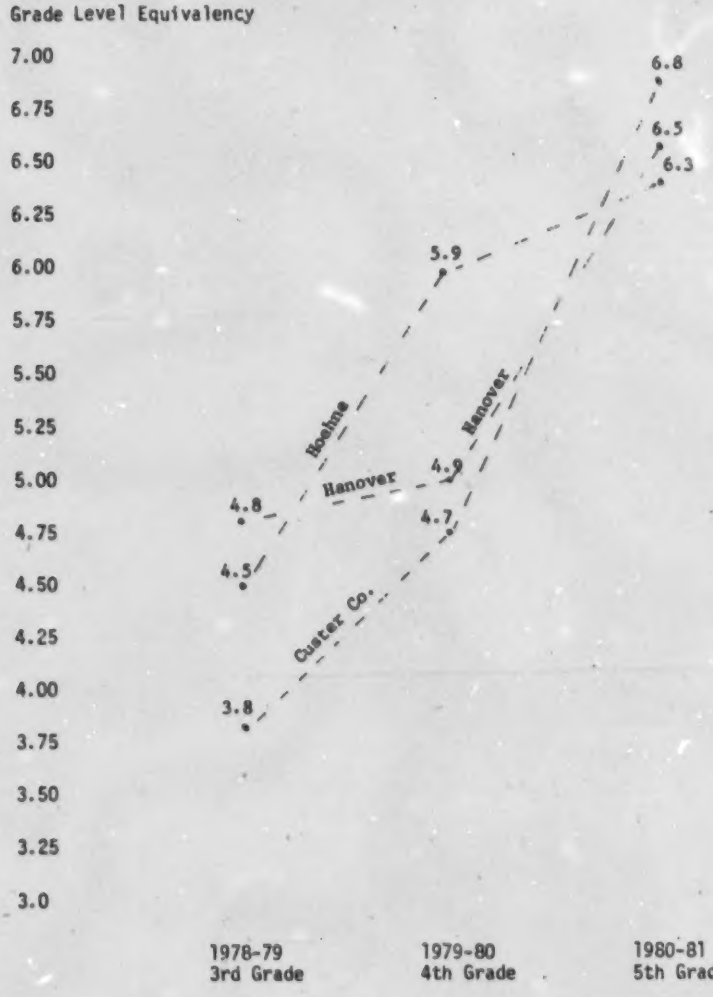

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Figure 11

Comparison of Math Achievement Scores (ITBS)
for 3rd Graders in 1978-79, with 4th Graders in
1979-80, with 5th Graders in 1980-81. (Three Districts)
(Tests administered in April of each year)

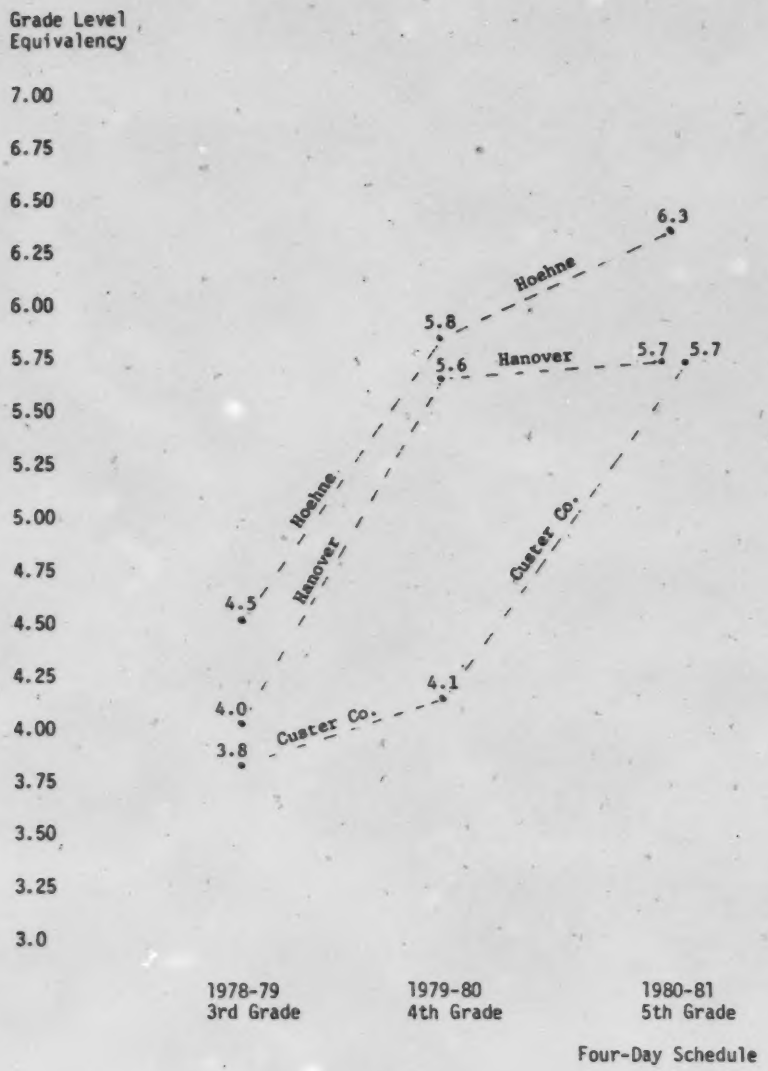

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Figure 12

Comparison of Achievement Scores (ITBS Composite Score) for 7th Graders in 1978-79, 8th Graders in 1979-80, and 9th Graders in 1980-81. (Four Districts)
(Tests administered in April of each year)

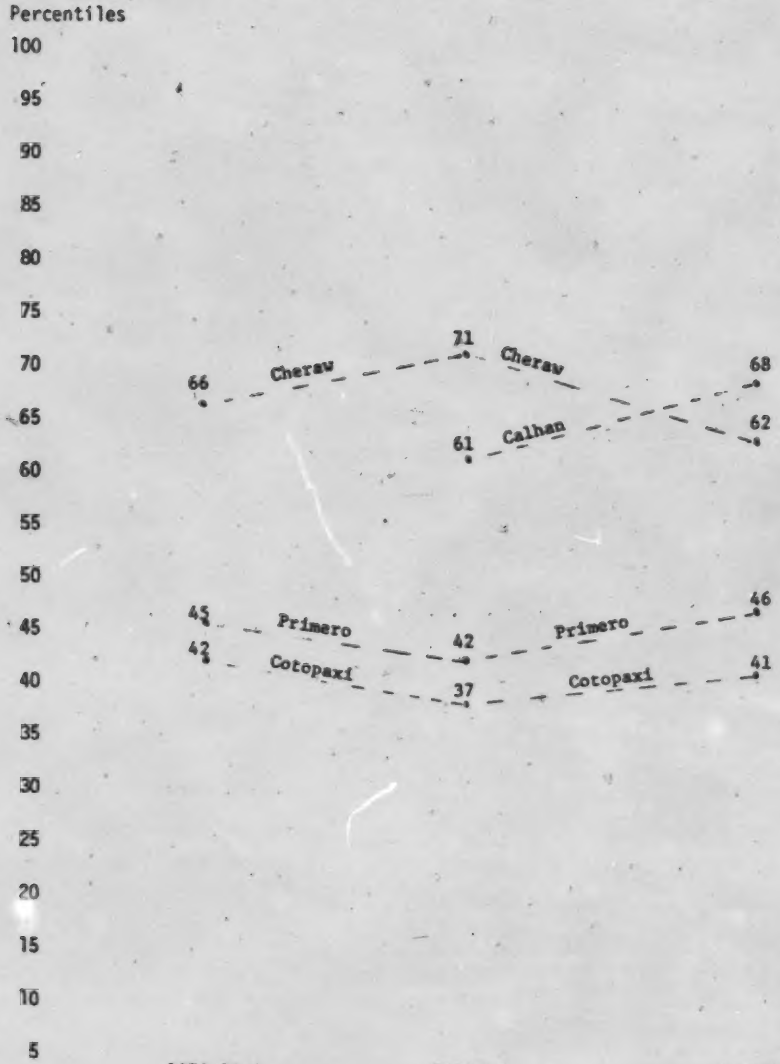

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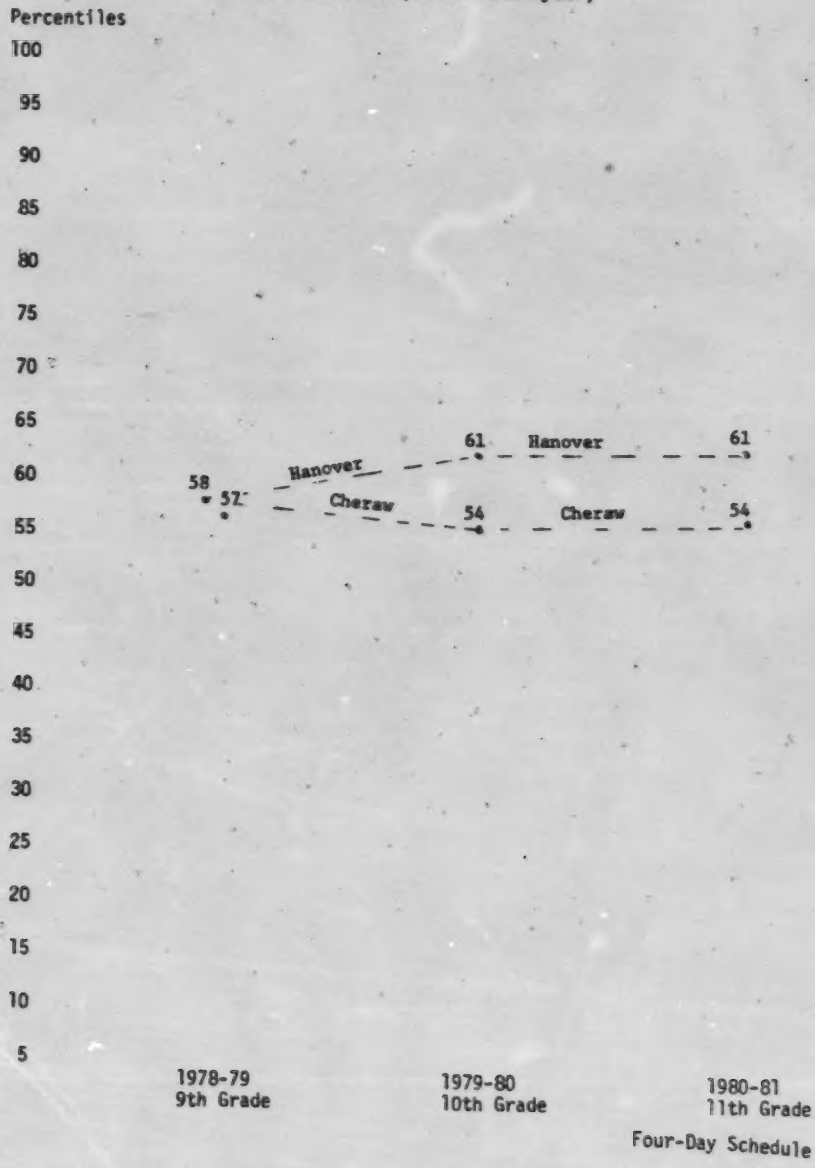
Figure 13

Comparison of Math Achievement Scores (TAPF Test of Academic Achievement and Proficiency) for 9th Graders in 1978-79, with 10th Graders in 1979-80, and with 11th Graders in 1980-81. (Two Districts)
(Tests administered in April of each year)



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CHAPTER VI

STUDENT ATTENDANCE

Students are absent from school for a variety of reasons: illness, family vacations, medical appointments, truancy, etc. Whatever the causes may be, absences from school reduce a student's opportunities to master subject material. Based on their isolated locations, many rural schools face unique attendance problems. This section will examine the attendance data gathered from school districts utilizing the four-day school week schedule. Student attendance statistics from the four-day schedule will be compared with attendance figures from the conventional five-day schedule, in order to determine the affect the four-day schedule has on student attendance.

When asked to compare their attendance during the four-day week with their attendance the previous year on the five-day week, 53% of the fourth through eighth grade students responded that they were absent "much less" or "somewhat less" on the four-day schedule. Ten percent indicated that they were absent "somewhat more," and 4% said they were absent "much more" because of the change to the four-day week. Seventy-seven percent of the ninth through twelfth grade students indicated that they were absent "much less" or "somewhat less" than when they attended school five days each week. Only 6% reported that they were absent "much more" or "somewhat more" because of the change to the four-day week.

Parents were asked to comment on whether the change to the four-day schedule had affected their children's attendance. Although the majority (57%) indicated that the change in schedule had no affect on their children's attendance, 38% reported that the attendance of their children was "somewhat improved" or "much improved." Five percent said their children's attendance was not as good as in previous years.

Parents noted that it was no longer necessary to remove their children from school for appointments in town with the doctor, dentist, allergist, orthodontist, etc. When commenting on the benefits of the four-day schedule, parents said that they were now able to make appointments for the off day (Monday or Friday).

As noted in the certified staff section of this evaluation, one school calculated that 2,965 student-hours of academic time were lost to extracurricular activities scheduled during the school day. Although the students are not officially absent, they do miss a significant amount of instructional time to extra-curricular activities. This academic time is not lost during the four-day schedule, when activities are scheduled for the off day.

According to attendance statistics compiled from school district records (1978-81), total absences were reduced 23% during the first year of the four-day school week. All grade levels of all reporting districts showed a decrease in absenteeism,

ranging from 9% to 39% fewer absences. The primary grades (K-6) had 25% fewer absences, while the secondary grades (7-12) had 23% fewer absences. It is clear however, that an absence during the four-day week is more critical than an absence during the five-day week. Students miss approximately one and one-quarter days of instructional time when they are absent during the four-day school week. Therefore, a conversion factor (1.20-1.25) was utilized to compute a more meaningful statistic--the percent of class time gained or lost due to student absences during the four-day week.

For all districts combined, 6.3% fewer student-days were lost under the four-day schedule than under the five-day schedule. Two districts (Primero and Cheraw) lost 13% and 4% more days, respectfully, under the new schedule, while all other districts showed reductions in days lost, which ranged from 2% to 24%.

The average number of absences per student per year under the conventional five-day schedule was 6.53. This compares to 6.28 absences per student per year under the four-day schedule. The 6.28 figure was derived by multiplying the number of actual absences per student per year (5.14) under the four-day schedule by a 1.22 conversion factor to account for the longer days of the four-day schedule. When the absenteeism rates of the four-day and five-day schedule are compared to determine the total difference in learning time which results from those absences, the

result may not be educationally significant. Students on the four-day schedule gained one and one-half hours of instructional time per year because of differences in absenteeism attributable to the change in schedules. Students in schools such as Pritchett, which experienced a more substantial decrease in absences (24%) because of the four-day week, gained only 1.6 days (9.4 hours) of instructional time. Clearly, the amount of academic time gained or lost by students in schools which changed to a four-day schedule amounts to less than 1% of the total instructional time (1,080 hours) required by state law at the secondary level.

CHAPTER VII

THE IMPACT OF THE FOUR-DAY SCHEDULE ON ENERGY USE AND OTHER BUDGETARY ITEMS

The 1980-81 Winter in Colorado

An understanding of annual temperature variations is necessary in order to compare heating fuel use for the school year under the four-day school week with that of the previous years. If temperatures in Colorado were significantly warmer or cooler than usual during the 1980-81 year, incorrect conclusions regarding the impact of the four-day schedule might be drawn.

Two procedures were used in order to assess temperature patterns. First, the average monthly temperatures (20 years) for two key weather stations, Cheyenne Wells and Pueblo were determined, and compared to the monthly averages for the 1980-81 school year. The second, more complex procedure, involved studying heating degree-day patterns for the weather station closest to each of the school districts in the study, and comparing the twenty year average with the heating degree-day for the 1980-81 school year.

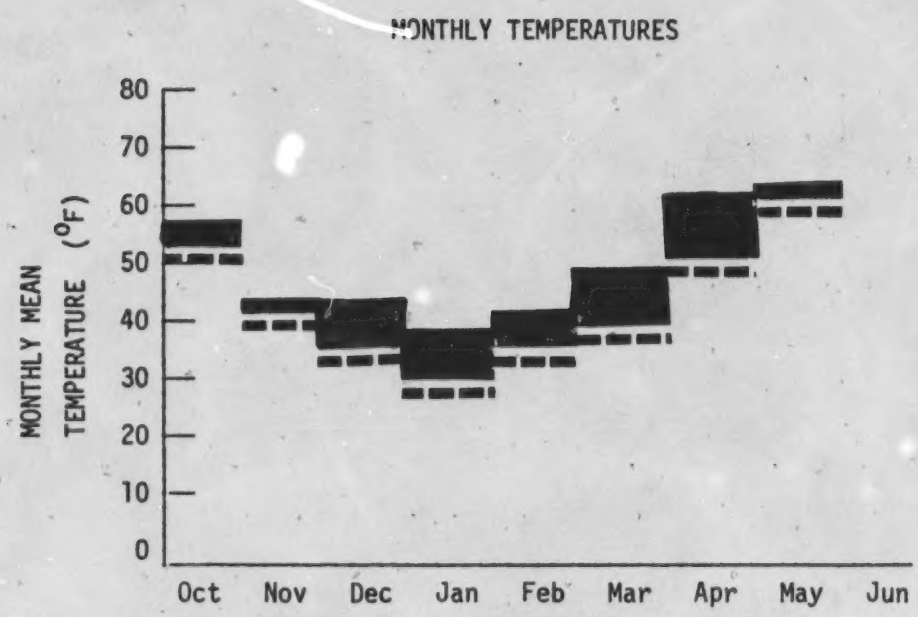
Cheyenne Wells and Pueblo were chosen as key weather stations in the first procedure because they geographically bracket most of the school districts in this study better than any other two stations. When a straight line is drawn between these two

locations, eight of the twelve districts are located within seventy miles of that line. Conclusions to be drawn from comparisons between the twenty-year temperature averages at the Cheyenne Wells and Pueblo weather stations and the temperature patterns at those stations during the 1980-81 school year, can be presumed to be roughly equivalent to the temperature patterns experienced in the districts studied. Primero, Cotopaxi, Park County, and Custer County would not be comparable. They are communities in the foothills or mountains, whose elevations and climate patterns are significantly different from the other eight districts.

As may be seen in Figures 14 and 15, the pattern of monthly temperatures for the 1980-81 school year is virtually identical for both Pueblo and Cheyenne Wells. The monthly temperatures for 1980-81 were somewhat warmer than the twenty year average for each month of the school year. Significantly warmer temperatures were registered in December, January, February, March, and April. December was eight degrees warmer than the average at both weather stations. January was seven degrees warmer, February was five degrees warmer, March was 4.5 degrees warmer, and April was nine degrees warmer than the respective 20 year monthly average temperatures for those months. Clearly, the 1980-81 school year was a much warmer than average year.

FIGURE 14

PUEBLO



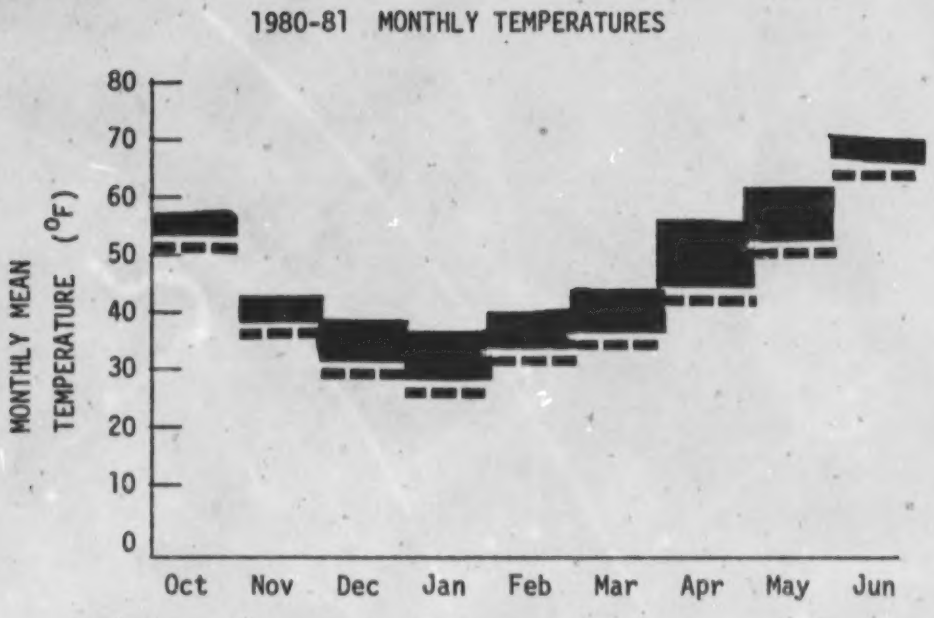
▬▬ Represents the average monthly temperature for this weather station for the past twenty years.

▬▬ The darkened area is the amount above the twenty year average that the 1980-81 monthly averages represent.

Source: Colorado Climate Center, Department of Atmospheric Science, Colorado State University.

FIGURE 15

CHEYENNE WELLS



▬▬ Represents the average monthly temperature for this weather station for the past twenty years.

▬▬ The darkened area is the amount above the twenty year average that the 1980-81 monthly averages represent.

Source: Colorado Climate Center, Department of Atmospheric Science, Colorado State University.

FIGURE 16

ANNUAL HEATING DEGREE DAY STATISTICS BY DISTRICT

School District	Nearest Weather Station	Annual Heating Degree Day Average for the Last Twenty Years	Heating Degrees Days 1979-80	Heating Degrees Days 1980-81
Branson	Trinidad	5642	5551	4609
Calhan	Colorado Springs	6473	6478	5444
Cheraw	Lamar	5402	5541	4534
Cotopaxi	Salida	6910	7298	6214
Custer County	Salida	6910	7298	6214
Edison	Colorado Springs	6473	6478	5444
Hanover	Colorado Springs	6473	6478	5444
Hoehne	Trinidad	5642	5551	4609
LaVeta	Walsenburg	5460	5619	4640
Park County	Salida	6910	7298	6214
Primero	Trinidad	5642	5551	4609
Pritchett	Lamar	5402	5541	4534
		$\bar{X}$ = 6111	$\bar{X}$ = 6223	$\bar{X}$ = 5209

Source: Colorado Climate Center, Department of Atmospheric Sciences, Colorado State University

FIGURE 17

HEATING FUEL CONSUMPTION

Heating Fuel Type	District	Average Fuel Consumption for 78-79 and 79-80 school years	Fuel Consumption During 1980-81 school year	Tons or Gallons Saved	Savings as a % of 78-79, 79-80 Average
Coal	Primero	254.4 (tons)	174.5 (tons)	79.9 (tons)	31.3%
Fuel Oil	Custer County	23,193 (gal)	20,207 (gal)	2,986 (gal)	12.8%
Propane	Hoehne	46,106.5 (gal)	35,221 (gal)	10,885.5 (gal)	23.6%
	Branson	20,837 (gal)	12,116 (gal)	8,721 (gal)	41.8%
Natural Gas	Cheraw	27,500.5 (cu ft)	17,672 (cu ft)	9,828.5 (cu ft)	35.7%
	Pritchett	28,072.5 (cu ft)	18,583 (cu ft)	9,489.5 (cu ft)	33.8%

Figure 16 summarizes heating degree day information for the weather station closest to each school district in the study. In each case the 1980-81 figures were lower than the previous year. On the average, the station closest to each of these communities registered 1,014 fewer heating degree days during 1980-81 than in 1979-80, and 902 fewer than the twenty year average. 1980-81, the year that twelve school districts in this study experimented with a four-day schedule, was an unusually warm year. It was particularly warm from December through April. Based on the decrease (1,014) of heating degree days in 1980-81, it was determined that heating fuel consumption for these districts would be roughly 16% less than the previous year because of the mild winter. Any reduction in heating fuel consumption beyond this figure could be attributable to the four-day schedule.

Heating Fuel Consumption

Six of the twelve districts contributed usable fuel consumption data. One heated with coal, one with fuel oil, two with natural gas, and two with propane. Figure 17 summarizes the heating fuel consumption patterns by fuel type over the last three school years.

All six districts showed reductions in heating fuel consumption during the 1980-81 school year when the four-day schedule was being employed. The savings range from 12.8% for Custer County to 41.8% for Branson. Even when these figures are adjusted by 16% to reflect the unusually mild temperatures of the winter of 1980-81, all the districts except Custer County show significant energy savings. Based on the actual savings of these districts, it can be concluded that schools using the four-day schedule could anticipate savings in heating fuel consumption of from 7% to 25%, even in years when temperature patterns more closely resemble long-term averages.

In making the decision about which four week days to include in the school calendar, the anticipation of greater energy savings led six districts to make Monday the off day. The assumptions made in this regard seem to be correct. The three districts showing the highest percentage of heating fuel savings in Figure 17 (Branson, Cheraw and Pritchett) all operate on a Tuesday through Friday schedule. The district showing the lowest percentage of fuel savings (Custer County) operates on a Monday through Thursday schedule. It is important to remember, however, that the paramount consideration for schools making Friday the off day, was not energy savings. Of greatest importance to these schools was to keep extracurricular activities from infringing on academic time.

Savings in Transportation Costs

Most school districts believed that significant savings would be realized in transportation costs when they decided to implement the four-day school week. It seemed reasonable to expect a 20% savings in gasoline costs and bus maintenance expenses, based on the 20% reduction in bus service inherent in a four-day week. For districts that average more than 600 square miles in size, a 20% reduction in transportation costs would be substantial.

Eight districts reported their expenditures for gasoline and bus maintenance for the last three years. For both of these budget items, the two previous years were averaged together to generate a figure to compare against the 1980-81 year when the four-day schedule was in effect. The researchers utilized data from September through May of each year, because data for June through August of 1981 was not available.

The districts used an average of 11,206 gallons of gasoline during each of the two school years prior to implementing the four-day schedule. The average gasoline consumption of these districts decreased by 2,516 gallons. This represents a 22.5% savings in energy consumption. However, there is at least one notable disclaimer in this regard. Although Cheraw reduced its regular bus route mileage by 21%, the mileage increase for transportation of students to extracurricular activities in the Cheraw

district was 112% under the four-day schedule. This increase involved gasoline for 8,000 miles of activity-related transportation, but it does not appear on the district's budget, because the booster club paid for the gas.

Bus maintenance cost figures showed similar results for most districts. The reporting districts spent an average of $4,177.60 on bus maintenance (9 month year) during each of the two years prior to implementation of the four-day school week, and $3,422.80 per district this past year when on the four-day week. This represents an average savings of 18%. The assumptions made by these districts that transportation costs could be reduced by one-fifth as a result of the four-day schedule were valid.

Savings in Electrical Consumption

Eight of the twelve school districts in the study provided electrical consumption information for the years 1978-81. The kilowatt hours used by each district during the two school years prior to implementation of the four-day schedule were averaged, in order to calculate the savings that resulted from the four-day schedule. The resultant average was then compared to the electrical consumption figure for the school year under the four-day schedule. Figures for the nine month school year were utilized for these comparisons, because the energy use information for the summer of 1981 was not available.

Electrical consumption was significantly lower for these eight districts during the 1980-81 school year when the four-day schedule was in effect. During the preceding two years, these districts consumed an average of 102,675 kilowatt hours of electricity per district per year. During the 1980-81 school year the same districts consumed 79,038 kilowatt hours, a savings of 23%. Another way to visualize the magnitude of the savings is to realize that these eight districts were using a total of 821,403 kilowatt hours per year under the traditional five-day calendar, and 632,310 kilowatt hours for the year under the four-day schedule. The resultant savings of 189,093 kilowatt hours of electricity exceeds the total annual electrical consumption of the largest district in the study.

Though efforts were made to monitor water consumption, few conclusions were possible. Many districts pay flat monthly rates regardless of usage, and several use unmetered well systems. Only Hoehne and Primero had records that would enable water usage comparisons between the five and the four-day week. Hoehne showed a water consumption savings of 25.8% (283,180 gallons) when the usage for the 1980-81 school year was compared to the average for the years 1978-80. Primero showed only a 1% savings in the same kind of comparison.

Savings in Substitute Teacher and Other Staff Costs

Fewer teacher absences would be anticipated when teachers have an extra weekday available for personal use, as under the four-day schedule. Reduced teacher absences could be a significant factor educationally, providing greater instructional continuity, and contributing to district savings by reducing the costs for substitute teachers.

Eight of the twelve districts in the study reported the costs and use of substitute staff for the last three years. The 1978-79 and 1979-80 data for each district was averaged to compare with 1980-81 figures from the four-day schedule. These eight districts averaged 98.8 days of substitute use during the previous two school years, and 74.25 days under the four-day schedule in 1980-81. The resultant average savings of 24.55 teacher-days represents a savings of $675 per district. These savings were not evenly distributed, however. Though all districts showed some savings in this category, two districts showed much larger savings than the others. Hanover saved over $1,900 and Custer County saved nearly $1,200.

No other staff budgets showed consistent savings across the districts reporting. Clerical staff hours remained the same or increased in all but two districts. Superintendents paid their secretaries for an average of eight and one-half hours per

day on the four-day schedule compared to seven hours for the traditional five-day schedule. A few districts brought their clerical staff in on the fifth day as well. Only in Primero and Edison did clerical time and costs decline (less than 2%).

Custodial staff costs generally increased because districts employed their custodians four long days and a shorter fifth day. Several superintendents indicated that the custodians were able to keep the buildings looking better as result of this schedule, because the staff was able to perform maintenance on the fifth day that could not be done if students were present. Superintendents also noted that maintenance which was previously delayed until summer could now be completed during the school year on the fifth day. This would result in savings during the summer months that is not reflected in these data.

The working hours and related costs of cooks and kitchen staff increased in as many districts as they decreased. Most districts provided a breakfast program or afternoon snack program, nullifying the savings that would result if the staff members were not employed on the fifth day.

CHAPTER VIII

RECOMMENDATIONS FOR FURTHER STUDY

While significant effort and resources were invested in the evaluation of the four-day schedule, several important questions remain incompletely answered, and are in need of further study. The twelve districts involved in the study all have small enrollments and represent similar types of communities. Whether the four-day week will prove to be a positive scheduling alternative in larger school districts, or in metropolitan communities, cannot be determined from the results of this study.

A second question that needs further study is the matter of energy savings. The districts unquestionably saved money (20% average) on energy related to transportation and by reducing heating fuel consumption. Districts seemed to save substantial amounts of money, but it could not be determined what percent of these savings were actually attributable to the four-day week. Several problems prevent conclusive interpretations of this data. First, Colorado had one of the mildest winters in recent history. Adjustments were made for this, but the researchers believe energy consumption needs to be monitored in a more typical year. Also, the researchers found it difficult in some cases to find weather stations in close enough proximity to the schools to meaningfully compare heating degree-day information with district energy use.

In some cases, school purchasing and record-keeping procedures prevent an accurate determination of how much energy is actually used in a given period of time. Districts which heat with coal, for example, tend to fill their bins when they have the money in their budget to do so, and they may conclude the school year with an unspecified quantity remaining. Because of this kind of record-keeping problem, the data from several districts could not be used.

Student achievement is another area which requires further study. While most of the districts tested their students systematically the year of the four-day schedule, many lacked adequate data for the years prior to the schedule change. Such baseline information is necessary to interpret changes that might have occurred during the experimental year. It is not enough to know that at the end of the school year on the four-day schedule the students in a particular district finished in the 55th percentile. Districts which anticipate implementing the alternative schedule should test every grade level one year (preferably two years) before making the schedule change.

A final area requiring further research involves a question of the Hawthorne Effect. An innovation is frequently perceived to be a very positive thing initially, but the support for it may later dwindle as the novelty and enthusiasm surrounding the innovation or change, wears off. The four-day schedule needs to be studied over a longer period of time to determine if the

enthusiasm expressed by parents, teachers, and students will be maintained at the high level observed in this study.

APPENDIX A

Office for Rural Education
Colorado State University
Alternative School Calendar Study

STUDENT OPINIONAIRE

GRADES 4-8

1981

Write in your school district reference number. Now, darken in the appropriate circle to the right of each written digit.--

0 1 2 3 4 5 6 7 8 9
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0

Now, darken in the circle indicating your grade level.

K 1 2 3 4 5 6 7 8
0 0 0 0 0 0 0 0 0

Directions: Use a soft lead pencil (preferably No. 2). Do not use ink. Mark your answers by filling in the circle next to the response you want to make. There are no right or wrong answers. Pick the one that is best for you.

1. In comparison to last year, how well do you like school this year?

   0 Much better this year
   0 Better this year
   0 About the same
   0 Worse this year
   0 Much worse this year

2. In comparison to last year, how well do you like the schedule this year?

   0 Much better this year
   0 Better this year
   0 About the same
   0 Worse this year
   0 Much worse this year

3. How do you feel about the length of the school day?

   0 Much too long
   0 Too long
   0 About the right length
   0 Too short
   0 Much too short

4. Compared to last year, how well are your teachers teaching?

   0 Much better this year
   0 Better this year
   0 About the same
   0 Not quite as well this year
   0 Definitely not as well this year

5. Compared to last year, how often are you absent?

   0 Much less this year
   0 Somewhat less this year
   0 About the same
   0 Somewhat more this year
   0 Much more this year

Enter your school reference number. (Same as on Page 1)

0 1 2 3 4 5 6 7 8 9
-- 0 0 0 0 0 0 0 0 0 0
-- 0 0 0 0 0 0 0 0 0 0

Enter your grade level. (Same as on Page 1)

K 1 2 3 4 5 6 7 8
0 0 0 0 0 0 0 0 0

6. Compared to last year, how much time do you spend doing things together with your family?

- O We spend much more time together this year.
- O We spend somewhat more time together this year.
- O We spend about the same this year as last.
- O We spend less time together this year.
- O We spend much less time together this year.

7. Compared to last year, how much have you learned in school this year?

- O Much more this year
- O Somewhat more this year
- O About the same this year as last
- O Somewhat less than last year
- O Much less this year

8. On the weekday when you are not in school, what do you do with your time? Select three things from the following list that you usually do during the weekday time you are not in school.

- O Study
- O Read
- O Work on hobbies
- O Just "goof around"
- O Play games including sports
- O Work at home (not for pay)
- O Work for pay
- O Watch TV
- O Listen to radio or records

9. How many times this year you have used your day off from school to do something which you would have missed school to do last year? Some examples would be for doctor or dental appointments, special hunting seasons, etc.

- O 5 or more times
- O 3 to 5 times
- O Once or twice
- O None at all

10. I recommend the district

- O Continue with the calendar as it is now
- O Continue with the alternative calendar with certain modifications
- O Discontinue the plan and return to the calendar we had last year

Office for Rural Education
Colorado State University
Alternative School Calendar Study

STUDENT OPINIONAIRE

GRADES 9-12

1981

Write in your school district reference number. Now, darken in the appropriate circle to the right of each written digit.--

0 1 2 3 4 5 6 7 8 9
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0

Now, darken in the circle indicating your grade level.

9 10 11 12
0 0 0 0

Directions: Use a soft lead pencil (preferably No. 2). Do not use ink. Mark your answers by filling in the circle next to the response you want to make. There are no right or wrong answers. Pick the one that is best for you.

1. In comparison to last year, how well do you like school this year?

   0 Much better this year
   0 Better this year
   0 About the same
   0 Worse this year
   0 Much worse this year

2. In comparison to last year, how well do you like the schedule this year?

   0 Much better this year
   0 Better this year
   0 About the same
   0 Worse this year
   0 Much worse this year

3. How do you feel about the length of the school day?

   0 Much too long
   0 Too long
   0 About the right length
   0 Too short
   0 Much too short

4. Compared to last year, how well are your teachers teaching?

   0 Much better this year
   0 Better this year
   0 About the same
   0 Not quite as well as last year
   0 Definitely not as well this year

5. Compared to last year, how often are you absent?

   0 Much less this year
   0 Somewhat less this year
   0 About the same
   0 Somewhat more this year
   0 Much more this year

Enter your school reference number. (Same as on Page 1)

```
          0 1 2 3 4 5 6 7 8 9
       -- 0 0 0 0 0 0 0 0 0 0
       -- 0 0 0 0 0 0 0 0 0 0
```

Enter your grade level. (Same as on Page 1)

```
9  10  11  12
0   0   0   0
```

6. Compared to last year, how much time do you spend doing things together with your family?
   - O We spend much more time together this year
   - O We spend somewhat more time together this year
   - O We spend about the same this year as last
   - O We spend less time together this year
   - O We spend much less time together this year

7. Compared to last year, how much have you learned in school this year?
   - O Much more this year
   - O Somewhat more this year
   - O About the same this year as last
   - O Somewhat less than last year
   - O Much less this year

8. On the weekday when you are not in school, what do you do with your time? Select three things from the following list that you usually do during the weekday time you are not in school.
   - O Study
   - O Read
   - O Work on hobbies
   - O Just "goof around"
   - O Play games including sports
   - O Work at home (not for pay)
   - O Work for pay
   - O Watch TV
   - O Listen to radio or records
   - O Drive around

9. How many times this year do you estimate that you used your day off from school to do something which in a five-day school week you would have had to miss school for? Some examples would be doctor or dental appointments or special hunting seasons, etc.
   - O 5 or more times
   - O 3 to 5 times
   - O Once or twice
   - O None at all

10. Compared to last year, how would you describe your personal use of energy? (Things like gas for cars, electricity at home, etc.)
   - O I use much more this year
   - O I use somewhat more this year
   - O I use about the same
   - O I use somewhat less this year
   - O I use much less this year

11. I recommend the district
   - O Continue with the calendar as it is now
   - O Continue with the alternative calendar with certain modifications
   - O Discontinue the plan and return to the traditional calendar

Form C

Office for Rural Education
Colorado State University
Alternative Calendar Study

School District Reporting _____

Grade Level That You Teach _____

CERTIFIED STAFF OPINIONAIRE

1981

The purpose of this opinionaire is to obtain your reaction to the alternative calendar we used this year. You should consider each statement to begin with the phrase "because of the alternative calendar....." Should you wish to add interpretive comments in the margin, please do so.

1. My effectiveness as a teacher has

   a. increased a lot
   b. increased somewhat
   c. not changed
   d. decreased somewhat
   e. decreased a lot

2. Student achievement has

   a. increased a lot
   b. increased somewhat
   c. not changed
   d. decreased somewhat
   e. decreased a lot

3. Student attitudes toward school are

   a. much more positive
   b. somewhat more positive
   c. not changed
   d. somewhat less positive
   e. much less positive

4. Student behavior in school has

   a. improved a lot
   b. improved somewhat
   c. not changed
   d. worsened somewhat
   e. worsened a lot

5. Community support for the schools is

   a. much stronger
   b. somewhat stronger
   c. not changed
   d. somewhat weaker
   e. much weaker

6. My attitude toward teachi.. as

   a. improved a lot
   b. improved somewhat
   c. not changed
   d. worsened somewhat
   e. worsened a lot

7. The time I spend on tasks such as lesson planning, grading, and instructional material preparation has

   a. increased a lot
   b. increased somewhat
   c. not changed
   d. decreased somewhat
   e. decreased a lot

8. My methods of teaching have changed in the following ways:
   (Check as many as apply to you.)

   ____ I give more homework.
   ____ I lecture more.
   ____ I give more time to study in class.
   ____ I use more time in class discussion.
   ____ I give less homework.
   ____ I give more individualized work.
   ____ I spend more time reviewing.
   ____ My methods have not changed.

9. What do you do with your time on the weekday when school is not in session? Check three things from the following list that you most often do with this day.

   ____ Grade papers
   ____ Prepare instructional materials
   ____ Shopping
   ____ Relaxing
   ____ Things I would normally have to take a personal or sick day to do (i.e. dentist and doctor appointments).
   ____ Professional development or in-service activities

10. The quality of in-service or professional development in the district has

    a. increased a lot
    b. increased somewhat
    c. not changed
    d. decreased somewhat
    e. decreased a lot

11. The job of teaching has

    a. become much easier
    b. become somewhat easier
    c. no change
    d. become somewhat more difficult
    e. become much more difficult

12. What things do you like about the alternative calendar?

_____

_____

_____

13. What things do you dislike about the alternative calendar?

_____

_____

_____

14. I recommend the district

    a. continue with the calendar as it now is
    b. continue with an alternative calendar with certain modifications
    c. discontinue the plan and return to the traditional calendar

15. What modifications would you recommend in the plan?

_____

_____

_____

Form D

Office for Rural Education
Colorado State University
Alternative School Calendar

School District Reporting _____

NON-CERTIFIED STAFF OPINIONAIRE

1. What is your job title? _____

2. Has the alternative school calendar made your job easier or more difficult to perform?

   a. Much easier
   b. Easier
   c. No change
   d. More difficult
   e. Much more difficult

3. What effect has the alternative calendar had on the attitude of the students in school? The alternative calendar has resulted in:

   a. Much improved attitude
   b. Somewhat improved attitude
   c. No change
   d. Somewhat poorer attitude
   e. Much poorer attitude

4. What is your general feeling about the alternative calendar?

   a. It is a very good idea.
   b. It is generally a good idea.
   c. It is no real improvement.
   d. It is generally not a good idea.
   e. It is a very poor idea.

5. What things do you like about the alternative calendar?

   _____

   _____

   _____

6. What things do you dislike about the alternative calendar?

   _____

   _____

   _____

7. As a result of the alternative calendar, has the number of hours that you are employed by the school district

   a. increased
   b. remained the same
   c. decreased

8. As a result of the alternative calendar, has your pay

   a. increased
   b. remained the same
   c. decreased

9. I recommend that the district

   a. continue with the calendar as it is now
   b. continue with an alternative calendar with certain modifications
   c. discontinue the plan and return to the traditional calendar

Form E

Office for Rural Education
Colorado State University
Alternative School Calendar

School District Reporting _____
One Parent Household _____
Two Parent Household _____

PARENT OPINIONAIRE

Answer each question by circling the letter of the answer that states best how you feel. If you have more than one child in school and your response to any questions differs depending on which child's experience you consider, please note this in the margin next to the question.

1. Please indicate how many children you have in each grade level.

   K____ 1____ 2____ 3____ 4____ 5____ 6____

   7____ 8____ 9____ 10____ 11____ 12____

2. The alternative calendar has

   a. posed many new problems for our family
   b. posed a few new problems for our family
   c. posed no problems what-so-ever for our family

3. The alternative school calendar has

   a. enabled us to do many more things together as a family
   b. enabled us to do a few more things together as a family
   c. not affected our family life
   d. interfered somewhat in our doing things together as a family
   e. interfered a great deal in our doing things together as a family

4. What effect has the alternative calendar had on family net income? (Total income less expenses)
   Our family net income has

   a. increased significantly
   b. increased somewhat
   c. not changed
   d. decreased somewhat
   e. decreased significantly

5. Compared to last year, the school attendance of our children is

   a. much improved this year
   b. somewhat improved this year
   c. not changed
   d. not quite as good this year
   e. not nearly as good this year

6. What effect has the alternative calendar had on your children's attitude toward school?

   a. Much better attitude this year
   b. Somewhat better attitude this year
   c. No change
   d. Somewhat worse attitude this year
   e. Much worse attitude this year

7. What effect has the alternative calendar had on your children's performance in school?
   With the new calendar they are performing:

   a. Much better
   b. Somewhat better
   c. No differently
   d. Somewhat poorer
   e. Much poorer

8. What effect has the alternative calendar had on the energy use of your family? (Consider such things as gasoline use for the family.)
   As a family, we have:

   a. Greatly increased our use of energy
   b. Increased our energy use somewhat
   c. Not changed our energy use
   d. Decreased our energy use somewhat
   e. Greatly decreased our use of energy

9. What effect has the alternative calendar had on parent-school relationships?
   With the new calendar, parent-school relationships are:

   a. Much improved
   b. Somewhat improved
   c. Unchanged
   d. Somewhat worse
   e. Much worse

10. Have your children used the time that they are not in school constructively?

    a. Yes, very much so
    b. Yes, to some degree
    c. Not especially
    d. No, not at all

11. On the week day this year when your children are not in school, what do they do with their time? Check three activities from the following list that most closely describe what they do with their time.

_____ Study
_____ Read
_____ Work on hobbies
_____ Play games including sports
_____ Work at home (not for pay)
_____ Work for pay
_____ Watch TV
_____ Listen to radio or records
_____ Drive around
_____ Just "goof around"

12. What is your general feeling about the alternative calendar? It is:

a. A very good idea
b. Generally a good idea
c. OK but no real improvement
d. Generally not as good as the regular calendar
e. Definitely not a good idea

13. What specific things do you like about the alternative calendar?

_____

_____

_____

14. What specific things do you dislike about the alternative calendar?

_____

_____

_____

15. I recommend the district

a. continue with the calendar as it is now
b. continue with the calendar with certain modifications
c. discontinue the plan and return to the traditional calendar